Application No. 10/522,690

AMENDMENTS TO THE CLAIMS

A detailed listing of all claims that are, or were, in the present application, irrespective of whether the claim(s) remains under examination in the application are presented below. The claims are presented in ascending order and each includes one status identifier.

1. (Currently Amended) A method for the crystallization of macromolecules in a three-phase system using a vessel containing a lower aqueous phase, a middle liquid phase and an upper hydrophobic phase having a lower density than that of the lower aqueous phase, the method comprising:

- adding an aqueous solution of the macromolecules to the middle phase to form a fourth phase, followed by incubation, wherein
- said aqueous solution of macromolecules forms a fourth phase which does not immediately mix with the lower phase;
- said fourth phase does not mix completely with the lower phase until the crystallization begins in the fourth phase or at a phase boundary with the fourth phase;
- there is essentially no diffusion of water from the vessel through the upper phase over the duration of the crystallization process; and
- said middle phase is selected to have a diffusion of water from the fourth phase into the lower phase.

2. (Original) The method according to claim 1, characterized in that said aqueous lower phase has been replaced by a hygroscopic solid phase.

3. (Original) The method according to claim 1, characterized in that said lower phase is a hygroscopic liquid phase.

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4. (Previously Presented) The method according to claim 1, characterized in that said fourth phase migrates to the phase boundary between the lower and middle phases or to the phase boundary between the middle and upper phases after having been introduced into the vessel.

5. (Previously Presented) The method according to claim 1, characterized in that the vessel is designed in such a way that the fourth phase does not come into contact with the lower phase.

6. (Original) The method according to claim 5, characterized in that said fourth phase is located in an indentation.

7. (Previously Presented) The method according to claim 1, characterized in that said upper phase contains paraffin oil.

8. (Previously Presented) The method according to claim 1, characterized in that said middle phase contains hydroxy-terminated polydimethylsiloxane and/or phenylmethylsilicone oil.

9. (Previously Presented) The method according to claim 1, characterized in that said lower aqueous phase contains salts, buffer substances, polymers and/or organic solvents.

10. (Previously Presented) The method according to claim 1, characterized in that said solution of the macromolecule contains salts, buffer substances, polymers and/or organic solvents.

11. (Previously Presented) The method according to claim 1, characterized in that said macromolecules are proteins, DNA, RNA, complexes of macromolecules, protein complexes, protein/ligand complexes, DNA/ligand complexes, protein/RNA complexes, protein/DNA complexes, viruses or viral fragments.

12. (Previously Presented) The method according to claim 1, further comprising analyzing or continuously monitoring the crystallization by optical measuring methods.

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13. (Currently Amended) A device for the crystallization of macromolecules comprising: a multitude of sample vessels ~~(6, 16)~~ arranged to form a sample support, wherein said sample support has a contiguous edge [[(2)]] which is higher than the openings of the sample vessels, in which at least one subsection ~~(5, 15)~~ separated from the remaining sample vessel by lateral walls ~~(3, 13)~~ exists in each sample vessel ~~(6, 16)~~, wherein the top portions of the lateral walls ~~(3, 13)~~ in the sample vessels are lower than the lateral walls of the sample vessel ~~(4, 14)~~.

14. (Currently Amended) The device according to claim 13, wherein the bottom [[(1)]] of the subsections [[(5)]] is at the same level as the bottom of the sample vessels [[(6)]].

15. (Previously Presented) The device according to claim 13, wherein the bottom of the sample support is optically homogeneous.

16. (Currently Amended) The device for the crystallization of macromolecules according to claim 13, characterized in that the bottom of the sample support is optically homogeneous and that the bottom [[(1)]] of the subsections [[(5)]] is at the same level as the bottom of the sample vessels [[(6)]].

17. (Currently Amended) A device for the crystallization of macromolecules comprising: a multitude of sample vessels [[(6)]] arranged to form a sample support, in which at least two subsections [[(5)]] separated from the remaining sample vessel by lateral walls [[(3)]] exist in each sample vessel [[(6)]], wherein the top portions of the lateral walls [[(3)]] are lower than the lateral walls of the sample vessel [[(4)]], wherein the lateral wall or walls of at least one subsection has a different height.

18. (Currently Amended) The device according to claim 17, characterized in that the bottom of the sample support is optically homogeneous and that the bottom [[(1)]] of the subsections [[(5)]] is at the same level as the bottom of the sample vessels [[(6)]].

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19. (Currently Amended) A three-phase system for the crystallization of macromolecules in a method according to claim 1, in which three liquid phases are on top of one another in one vessel, wherein these phases are a lower aqueous phase, a middle liquid phase and an upper hydrophobic phase having a lower density than that of the lower aqueous phase.

20. (Original) The three-phase system according to claim 19, wherein said lower phase has been replaced by a hygroscopic phase of solid and/or liquid nature.

21. (Previously Presented) The method according to claim 1, wherein the crystallization is automated.

22. (Previously Presented) The method of according to claim 1 further comprising automated screening of the crystallized macromolecules.

23. (Currently Amended) The device according to claim 13 further comprising a robotic system operatively connected to the sample vessels ~~(6, 16)~~ that perform automated crystallization.

24. (Currently Amended) The device according to claim 17 further comprising a robotic system operatively connected to the sample vessels ~~(6, 16)~~ that perform automated crystallization.

25. (Previously Presented) The method according to claim 12 wherein the analyzing or monitoring of the crystallization is performed by a method selected from the group consisting microphotographs, light scattering methods and spectroscopic methods.

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